

RECEIVED

AUG 04 2004

Technology Center 2100

In the claims:



Claims

1. (Previously Amended) An apparatus adapted to be used with a distributed process control system having a user workstation remotely located from a distributed controller that controls one or more field devices using control modules, the apparatus comprising:

a computer having a memory and a processing unit;

a configuration application stored in the memory of the computer and adapted to be executed on the processing unit of the computer, wherein the configuration application is capable of being executed on the user workstation to create control modules for execution by the distributed controller wherein at least one of the control modules communicates with a further module in a device separated from the distributed controller to perform a control activity; and

a controller application stored in the memory of the computer and adapted to be executed on the processing unit of the computer, wherein the controller application is further adapted to be executed on the distributed controller to implement the one of the control modules during operation of the distributed process control system to communicate with the further module to perform the control activity;

wherein the configuration application, when executed on the computer, is further adapted to create the one of the control modules capable of being used by the distributed controller within the distributed process control system and wherein the controller application is adapted to cause execution of the one of the control modules within the computer to simulate the operation of the one of the control modules including communicating with the further module to thereby simulate operation of the distributed process control system.

2. (Previously Amended) The apparatus of claim 1, wherein the configuration application is adapted to create a user interface for use in displaying information to a user, and further including a viewing application stored in the memory of the computer and adapted to be executed on the processing unit of the computer, wherein the viewing application is adapted to use the user interface to display information pertaining to the one of the control modules to a user.

3. (Original) The apparatus of claim 1, further including a configuration database application stored in the memory of the computer and adapted to be executed on the processing unit of the computer, wherein the configuration database application is adapted to communicate with the controller application within the computer to manage a configuration database.

4. (Previously Amended) The apparatus of claim 1, wherein the controller application includes an execution rate parameter specifying the rate of execution of the one of the control modules within the computer.

5. (Previously Amended) The apparatus of claim 4, wherein the execution rate parameter can be set to be greater than or less than a real time execution rate of the one of the control modules when the one of the control modules is executed within the distributed controller of the distributed process control system.

6. (Previously Amended) The apparatus of claim 1, wherein the configuration application is adapted to create a further control module capable of being executed within the distributed controller during operation of the distributed process control system.

7. (Previously Amended) The apparatus of claim 1, wherein the configuration application is adapted to create the further module capable of being executed within one of the field devices communicatively connected to the distributed controller during the operation of the distributed process control system.

8. (Original) The apparatus of claim 1, further including a simulation application stored in the memory of the computer and adapted to be executed on the processing unit of the computer, wherein the simulation application is adapted to communicate with the controller application within the computer to simulate the operation of the distributed process control system.

9. (Original) The apparatus of claim 1, wherein the controller application is adapted to communicate with the field devices through an input/output device when the controller application is executed within the distributed controller.

10. (Original) The apparatus of claim 1, wherein the controller application is capable of communicating with a further controller that is of a different type than the distributed controller of the distributed process control system.

11. (Original) The apparatus of claim 10, further including a viewing application stored in the memory of the computer and adapted to be executed on the processing unit of the computer, wherein the viewing application is adapted to communicate with the controller application and to use a user interface to display information sent from the further controller.

12. (Previously Amended) A method of simulating a distributed process control system having a user workstation remotely located from a distributed controller which controls one or more field devices using control modules, wherein the user workstation is adapted to store and execute a configuration application used to create the control modules for execution by the distributed controller to communicate with at least one further module within a device separated from the distributed controller and wherein the distributed controller is adapted to store and execute a controller application to control a process using the control modules during operation of the distributed process control system, the method comprising the steps of:

storing the configuration application in a first computer having a memory and a processing unit;

storing the controller application in the memory of the first computer;

executing the configuration application on the first computer to create a first control module adapted to be used by the distributed controller within the distributed process control system to communicate with the at least one further module; and

executing the controller application on the first computer to cause execution of the first control module and the at least one further module within the first computer to thereby simulate operation of the distributed process control system.

13. (Original) The method of claim 12, further including the steps of executing the configuration application to create a user interface for use in displaying information to a user, storing a viewing application in the memory of the first

computer and executing the viewing application on the first computer to display information pertaining to the first control module to a user on a display associated with the first computer using the user interface.

14. (Original) The method of claim 12, further including the steps of storing a configuration database application in the memory of the first computer and executing the configuration database application on the first computer so that the configuration database application communicates with the controller application within the first computer to manage a configuration database.

15. (Original) The method of claim 12, wherein the step of executing the controller application includes the step of specifying an execution rate for the first control module when executing the first control module within the first computer.

16. (Original) The method of claim 15, wherein the step of executing the controller application includes the step of executing the first control module at an execution rate that is greater than or less than a real time execution rate of the first control module when the first control module is executed within the distributed controller of the distributed process control system.

17. (Previously Amended) The method of claim 12, wherein the step of executing the configuration application includes the step of creating the at least one further module capable of being executed within one of the field devices communicatively connected to the distributed controller during the operation of the distributed process control system.

18. (Original) The method of claim 12, further including the steps of storing a simulation application in the memory of the first computer and executing the simulation application on the first computer to communicate with the controller application within the first computer to simulate the operation of the distributed process control system.

19. (Original) An apparatus adapted to be used in conjunction with a distributed process control system having a user workstation remotely located from a

distributed controller that controls one or more field devices using control modules, the apparatus comprising:

    a computer having a memory and a processing unit;

    a display connected to the computer;

    a controller application stored in the memory of the computer and adapted to be executed on the processing unit of the computer, wherein the controller application is adapted to be executed on the distributed controller to implement a control module during operation of the distributed process control system and wherein the controller application is capable of communicating with a further controller that is of a different type than the distributed controller of the distributed process control system; and

    a viewing application stored in the memory of the computer and adapted to be executed on the processing unit of the computer, wherein the viewing application is adapted to communicate with the controller application and to use the display to display information sent from the further controller.

20. (Original) The apparatus of claim 19, further including an interface connected between the further controller and the controller application.

21. (Original) The apparatus of claim 20, wherein the interface is an OPC interface.